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... design in order to satisfy the necessary condition of **customer needs** and support  
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... aims at satisfying individual customers' **needs** with near ... The **product design process** (setting the solution space) plays a ... design issues of being **customer centric** ...  
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... refine methods to improve integration of user aspects in the **product design process**. ... are to be taken into account when assessing **customer needs**, creating the ...  
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... to cost effectively deliver products tailored to **customer needs** and compete ...  
orders Capture engineering knowledge needed in the **product design process** and  
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... so that new products satisfy real **needs**. ... Conceptual design involves capturing  
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**20 Life cycle thinking: application to product design**

*Fava, J.A.;*

Electronics and the Environment, 1993., Proceedings of the 1993 IEEE International Symposium on , 10-12 May 1993

Pages:69 - 73

[\[Abstract\]](#) [\[PDF Full-Text \(392 KB\)\]](#) [IEEE CNF](#)

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**21 An integrated system for concurrent design engineering**

*Hernandez, J.A.; Luby, S.C.; Hutchins, P.M.; Leung, H.W.; Gustavson, R.E.; D Fazio, T.L.; Whitney, D.E.; Nevins, J.L.; Edsall, A.C.; Metzinger, R.W.; Tung, K Peters, T.J.;*

Artificial Intelligence for Applications, 1991. Proceedings., Seventh IEEE Conference , Volume: i , 24-28 Feb. 1991

Pages:205 - 211

[\[Abstract\]](#) [\[PDF Full-Text \(612 KB\)\]](#) [IEEE CNF](#)

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**22 Customer requirements research: providing input to quality function deployment**

*Suther, T.W.; Sharkey, A.;*

Customer Driven Quality in Product Design, IEE Colloquium on , 6 May 1994

Pages:3/1 - 3/8

[\[Abstract\]](#) [\[PDF Full-Text \(352 KB\)\]](#) [IEE CNF](#)

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**23 MCM-L technology: a systems cost analysis for a high volume automotive electronics application**

*Evans, J.L.; Bosley, L.E.; Romanczuk, C.S.; Johnson, R.W.;*

Components, Packaging, and Manufacturing Technology, Part B: Advanced Packaging, IEEE Transactions on [see also Components, Hybrids, and Manufacturing Technology, IEEE Transactions on] , Volume: 18 , Issue: 1 , February 1995

Pages:28 - 32

[\[Abstract\]](#) [\[PDF Full-Text \(504 KB\)\]](#) [IEEE JNL](#)

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**24 Design for environment development at Motorola**

*Hoffman, W.F., III; Locascio, A.;*

Electronics and the Environment, 1997. ISEE-1997., Proceedings of the 1997 International Symposium on , 5-7 May 1997

Pages:210 - 214

[\[Abstract\]](#) [\[PDF Full-Text \(612 KB\)\]](#) [IEEE CNF](#)

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**25 Development of virtual prototyping technology in the Samsung Engineering Project**

*Heedong Ko;*

Human Interaction with Complex Systems, 1996. HICS '96. Proceedings., Third Annual Symposium on , 25-28 Aug. 1996

Pages:145 - 146

[\[Abstract\]](#) [\[PDF Full-Text \(108 KB\)\]](#) [IEEE CNF](#)

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**26 Design process improvement (DPI)**

[Abstract] [PDF Full-Text (164 KB)] IEE CNF

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**27 Value Engineering and Product Engineering**

*Fallon, C.;*  
Product Engineering and Production, IRE Transactions on , Volume: 5 , Issue: 2 , Jun 1961  
Pages:93 - 97

[Abstract] [PDF Full-Text (600 KB)] IEEE JNL

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**28 Concurrent design of machined products: a multivariate decision approach**

*Changchien, S.W.; Lin, L.;*  
Systems, Man and Cybernetics, Part C, IEEE Transactions on , Volume: 30 , Is 2 , May 2000  
Pages:252 - 264

[Abstract] [PDF Full-Text (296 KB)] IEEE JNL

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**29 Integrating environmental objectives in the operational planning of printed circuit board assembly**

*Worhach, P.; Sheng, P.;*  
Electronics Packaging Manufacturing, IEEE Transactions on [see also Components, Packaging and Manufacturing Technology, Part C: Manufacturing, IEEE Transactions on] , Volume: 22 , Issue: 2 , April 1999  
Pages:118 - 127

[Abstract] [PDF Full-Text (252 KB)] IEEE JNL

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**30 Green design of telecom products: the ADSL high speed modem as case study**

*De Langhe, P.; Criel, S.; Ceuterick, D.;*  
Components, Packaging, and Manufacturing Technology, Part A, IEEE Transactions on [see also Components, Hybrids, and Manufacturing Technology, IEEE Transactions on] , Volume: 21 , Issue: 1 , March 1998  
Pages:154 - 167

[Abstract] [PDF Full-Text (620 KB)] IEEE JNL

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**A spreadsheet implementation of QFD and systems engineering approaches to support concurrent engineering**

Doukas, L. Pollock, G. Jeyaratnam, C.

Graduate Sch. of Eng., R. Melbourne Inst. of Technol., Vic., Australia;

*This paper appears in: Innovation in Technology Management - The Key Leadership. PICMET '97: Portland International Conference on Management Technology*

Meeting Date: 07/27/1997 - 07/31/1997

Publication Date: 27-31 July 1997

Location: Portland, OR USA

On page(s): 815 - 820

Reference Cited: 5

Number of Pages: xlvi+1018

Inspec Accession Number: 5739596

**Abstract:**

For an organisation to sustain its competitive advantage, there is a strong need for timely adjustment to ever rapidly changing customer demands. To achieve this, known customer needs must be prioritised and transformed into organised design requirements. This paper describes how a spreadsheet framework has been developed which incorporates a modified quality function deployment (QFD) and engineering process (SEP) for product development and planning. The analytic hierarchy process (AHP) is used as a means of ranking top level user requirements. The methodology provides a pro-active means and a strong link to quantified user requirements that are prioritised and **product design/perform** assuring that down-stream design is incorporated into trade-off decisions. An example is presented to test and **evaluate** the spreadsheet approach in heavy engineering projects.

**Index Terms:**

product development project engineering project management quality control research development management spreadsheet programs systems engineering analytic hierarchy process concurrent engineering heavy engineering projects organised downstream design requirements product development planning quality function deployment spreadsheet implementation systems engineering process top level user requirements ranking

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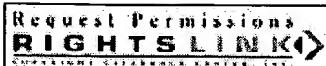
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## Consumer-centered product design specifications using fuzzy multivariate regression analysis

Kao, H.P. Kimbler, D.L. Juang, C.H. Bridges, W.C.

Nat. Central Univ., Taiwan;

*This paper appears in: Uncertainty Modeling and Analysis, 1993. Proceedings of the Second International Symposium on*

Meeting Date: 04/25/1993 - 04/28/1993

Publication Date: 25-28 April 1993

Location: College Park, MD USA

On page(s): 387 - 392

Reference Cited: 9

Inspec Accession Number: 4857656

**Abstract:**

To optimize **product design**, it is desirable that a functional model that describes the correlation between the product attributes and the design specifications is available. A new methodology which uses multivariate regression analysis is combined with the theory to model the correlation between consumer-perceived product quality and designer-controlled design factors. The fuzzy regression model is then utilized to predict the quality level of the intended design. This method is most suitable when the product has multiple quality attributes that could best be **evaluated** using linguistic terms

**Index Terms:**

computational linguistics fuzzy logic product development statistical analysis consumer product design specification consumer-perceived product quality attributes designer design factors fuzzy regression model fuzzy set theory linguistic terms multiple quality multivariate regression analysis product attributes

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**1 A new device design methodology for manufacturability**

*Lu, J.-C.; Holton, W.C.; Fenner, J.S.; Williams, S.C.; Kim, K.W.; Hartford, A.H; Chen, D.; Roze, K.; Littlejohn, M.A.;*  
Electron Devices, IEEE Transactions on, Volume: 45, Issue: 3, March 1998  
Pages:634 - 642

[\[Abstract\]](#) [\[PDF Full-Text \(268 KB\)\]](#) **IEEE JNL**

**2 Designing environmental considerations in to products-a novel qualitative life cycle approach**

*O'Connor, F.; Blythe, D.;*  
Electronics and the Environment, 1997. ISEE-1997., Proceedings of the 1997 International Symposium on, 5-7 May 1997  
Pages:192 - 197

[\[Abstract\]](#) [\[PDF Full-Text \(496 KB\)\]](#) **IEEE CNF**

**3 A case study in environmentally conscious design: wearable comput**

*Lankey, R.; MacLean, H.; Sterdis, A.;*  
Electronics and the Environment, 1997. ISEE-1997., Proceedings of the 1997 International Symposium on, 5-7 May 1997  
Pages:204 - 209

[\[Abstract\]](#) [\[PDF Full-Text \(576 KB\)\]](#) **IEEE CNF**

**4 ShellCase ultrathin chip size package**

*Badihi, A.;*  
Advanced Packaging Materials: Processes, Properties and Interfaces, 1999. Proceedings. International Symposium on, 14-17 March 1999  
Pages:236 - 240

[\[Abstract\]](#) [\[PDF Full-Text \(492 KB\)\]](#) **IEEE CNF**

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**5 A trial on comprehensive value judgment of industrial product**

*Yamaji, K.;*

Environmentally Conscious Design and Inverse Manufacturing, 1999. Proceed  
EcoDesign '99: First International Symposium On , 1-3 Feb. 1999

Pages:10 - 13

[\[Abstract\]](#) [\[PDF Full-Text \(460 KB\)\]](#) [IEEE CNF](#)

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**6 Intelligent decision support system for continuous improvement of  
resource-saving and recycling-conscious manufacturing**

*Sang-Jae Song;*

Environmentally Conscious Design and Inverse Manufacturing, 1999. Proceed  
EcoDesign '99: First International Symposium On , 1-3 Feb. 1999

Pages:723 - 727

[\[Abstract\]](#) [\[PDF Full-Text \(1272 KB\)\]](#) [IEEE CNF](#)

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